UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,559	09/05/2006	Rune Freyer	2006-IP-019761 U1 USA	7234

49431 7590 11/10/2009

SMITH IP SERVICES, P.C.
P.O. Box 997
Rockwall, TX 75087

EXAMINER	
DITRANI, ANGELA M	

ART UNIT	PAPER NUMBER
3676	

NOTIFICATION DATE	DELIVERY MODE
11/10/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mail@smithipservices.com
scrawford@smithipservices.com
sally@smithipservices.com

Office Action Summary	Application No.	Applicant(s)	
	10/598,559	FREYER, RUNE	
	Examiner	Art Unit	
	Angela M. DiTrani	3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/10/09, 10/04/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 5, dependent upon independent claim 1, recites the limitation "wherein the annular element is adapted to extend from the retracted state to the expanded state as a reaction to exposure to the fluid in the space." As amended, independent claim 1 recites "wherein the device comprises an annular element disposed on a tubular structure in the borehole and including an expandable material which extends from a retracted state to an expanded state in response to contact with a fluid in the well system." Therefore, dependent claim 5 fails to further limit the recitation as claimed.

2. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 15, dependent upon independent claim 13, recites the limitation "wherein the expanding step is performed in response to contact between the expandable material and the fluid. This limitation fails to further limit that which was previously set forth in independent claim 13, wherein "expanding the expandable material into the space in response to contact between the expandable material and the fluid" is claimed.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-5 and 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bol et al. (US 4,716,965 – cited previously) in view of Bosma et al. (WO 03/008756 - cited previously).

With respect to independent claim 1, Bol et al. discloses a well system, comprising: a device which expands into a space in a borehole **(2)**, the space being at least partly defined by a castable material **(3)** disposed radially between and in contact with the borehole and the device, wherein the device comprises an annular element **(5)** disposed on a tubular structure **(1)** in the borehole and including an expandable material **(5A, 5B)** which extends from a retracted state to an expanded state (col. 3, l. 3-14 and 32-36; col. 1, l. 55-68).

Bol et al. further discloses wherein the expandable material **(5A, 5B)** is placed at locations where a seal is needed most and notes that such a location includes regions of the inflow area of the well (col. 3, l. 17-25). The reference also notes the ability of the expandable material to expand (col. 3, l. 32-36). Bol et al., however, fails to teach wherein the expandable material expands in response to contact with a fluid in the well bore system as presently claimed.

Bosma et al. teaches a well bore system comprising a device comprising an annular element disposed on a tubular structure in the bore hole and including an expandable material thereon for the purpose of forming a seal between the tubular structure and the borehole wall wherein the expandable material swells upon contact with a fluid in the well system for the purpose of becoming firmly pressed between the tubular element and the cylindrical wall,

thereby adequately sealing the annular space (p. 2, l. 6-28). Since Bol et al. discloses the desirability to seal locations where a seal is needed most, such as regions of the inflow area of the well, it would have been obvious to one having ordinary skill in the art at the time the invention was made to try an expandable material as taught by Bosma et al. in place of the expandable material disclosed by Bol et al. in order to provide a material capable of swelling upon contact with a fluid at a location susceptible to fluid inflow, thereby providing a seal at the location at a time when fluid inflow to the region occurs.

With respect to depending claims 2-5 and 7, the reference discloses the system wherein the space is at least partly defined by a wall of the bore hole (**2**); wherein the space is at least partly defined by the tubular structure (**1**) wherein the space at least partly holds the fluid (col. 2, l. 41-col. 3, l. 25); wherein, in view of Bosma et al. as noted above within the rejection of claim 1, the annular element (**5**) is adapted to extend from the retracted state to the expanded state as a reaction to exposure to a fluid in the space; and wherein the space comprises an elongated channel (**6**) substantially defined by the castable material (**3**), the tubular structure (**1**) and the borehole wall (**2**).

With respect to independent claim 8, Bol et al. discloses a method of sealing a space in a borehole (**2**), the space being at least partly defined by a castable material (**3**) disposed in the borehole (**2**), the method comprising the steps of: disposing on a tubular structure (**1**) at least one annular element (**5**) comprising an expandable material (**5A, 5B**) capable of extending from a retracted state to an expanded state ((col. 3, l. 3-14 and 32-36; col. 1, l. 55-68); installing the tubular structure (**1**) into the borehole (**2**); then providing the castable material (**3**) into a volume defined by a wall of the borehole (**2**) and an outer surface of the tubular structure (**1**), the castable

material (**3**) extending at least partially circumferentially about the annular element (**5**); and extending the expandable material (**5A, 5B**)

Bol et al. further discloses wherein the expandable material (**5A**, **5B**) is placed at locations where a seal is needed most and notes that such a location includes regions of the inflow area of the well (col. 3, l. 17-25). The reference also notes the ability of the expandable material to expand (col. 3, l. 32-36), thereby sealing off fluid passageways in axial direction by the sheath (col. 3, l. 12-14). Bol et al., however, fails to teach wherein the expandable material extends into contact with the wall of the borehole.

Bosma et al. teaches a method of sealing a space in a borehole, wherein the space is at least partly defined by a castable material, i.e., **14**, in the borehole, wherein the cement at least partly defines the top portion of the space that is sealed. At least one annular element (i.e., **16, 18, 20, 22, 24**) comprising an expandable material capable of extending from a retracted state to an expanded state is disposed on a tubular structure **11**. The tubular structure is installed in the borehole and the expandable material extends into contact with the borehole wall in response to contact with a fluid in the well system for the purpose of becoming firmly pressed between the tubular element and the borehole wall, thereby adequately sealing the annular space (p. 2, l. 6-28). Since Bol et al. discloses the desirability to seal locations where a seal is needed most, and, further, teaches the sealing of fluid passages in axial direction, it would have been obvious to one having ordinary skill in the art to try an expandable material as taught by Bosma et al. capable of extending from a retracted state to an expanded state so as to contact the borehole wall in place of the expandable material disclosed by Bol et al. in order to provide a material capable of swelling upon contact with a fluid at a location susceptible to fluid inflow within fluid passages

that extend from the casing to the borehole wall, thereby providing a seal at the location at a time when fluid inflow occurs.

With respect to depending claims 9-12, the reference discloses wherein the disposing step further comprises disposing a plurality of annular elements at spaced intervals along a length of the tubular (col. 3, l. 3-25; Figure 1); wherein, in view of Bosma et al. as noted above within the rejection of independent claim 8, the expandable material (**5A, 5B**) is adapted to extend from the retracted state to the expanded state as a reaction to exposure to a fluid in the space; wherein the expandable material (**5A, 5B**) extends into the space after the castable material has hardened (col. 2, l. 50 – col. 3, l. 14); and wherein, in view of Bosma et al., the space comprises an elongated channel (**6**) defined by at least the castable material (**3**), the tubular structure (**1**) and the borehole wall (**2**).

With respect to independent claim 13, Bol et al. discloses a method of sealing an annulus in a borehole, the method comprising the steps of: positioning an expandable material (**5A, 5B**) on a tubular structure (**1**); installing the tubular structure (**1**) in the borehole (**2**), the annulus being formed between the tubular structure (**1**) and the borehole (**2**); then flowing a castable material (**3**) into the annulus, the castable material (**3**) partially displacing a fluid in the annulus (col. 3, l. 3-25), and the castable material being disposed radially between the expandable material (**5A, 5B**) and the borehole (**2**), but leaving at least one space containing the fluid in the annulus (col. 3, l. 3-25); and expanding the expandable material into the space (col. 2, l. 50 – col. 3, l. 14).

Bol et al. notes that the expandable material is placed at locations in the region of inflow area of the well (col. 3, l. 17-22). Therefore, in placing the castable material in the well and

displacing any drilling fluid out of the annulus therewith (col. 2, l. 41-49), a portion of a fluid that has flown into the well in the region of inflow, would be displaced with the drilling fluid. Since the region of inflow provides for fluid flow into the annulus therefrom, subsequent to displacement of the drilling fluid, at least one space containing the fluid would be contained in the annulus.

Bol et al., however, fails to teach wherein the expandable material expands in response to contact with the fluid, i.e., the fluid from the region of inflow as noted above. Bosma et al. teaches a well bore system comprising a device comprising an annular element disposed on a tubular structure in the bore hole and including an expandable material thereon for the purpose of forming a seal in an annulus in a borehole wherein the expandable material swells upon contact with a fluid in the well system for the purpose of becoming firmly pressed between the tubular element and the cylindrical wall, thereby adequately sealing the annular space (p. 2, l. 6-28). Since Bol et al. discloses the desirability to seal locations where a seal is needed most, such as regions of the inflow area of the well, it would have been obvious to one having ordinary skill in the art at the time the invention was made to try an expandable material as taught by Bosma et al. in place of the expandable material disclosed by Bol et al. in order to provide a material capable of swelling upon contact with a fluid at a location susceptible to fluid inflow, thereby providing a seal at the location at a time when fluid inflow to the region occurs.

With respect to depending claims 14-16 and 19, Bol et al. discloses wherein the positioning step further comprises positioning a plurality of sleeves **(5)** on the tubular structure **(1)**, each of the sleeves **(5)** including the expandable material **(5A, 5B)**; wherein, in view of Bosma et al. as noted within the rejection of independent claim 13, above, the expanding step is

performed in response to contact between the expandable material and the fluid; wherein the expanding step is performed at least partially after the castable material (**3**) has hardened in the annulus (col. 2, l. 40 – col. 3, l. 14); and, in view of Bosma et al. as noted within the rejection of independent claim 13, above, wherein in the positioning step the expandable material comprises a swellable material.

With respect to dependent claim 17, Bol et al. teaches wherein the flowing step further comprises leaving the space so that the space is bounded *at least partially* by the castable material insofar as because the castable material is placed in the annulus surrounding the casing and the borehole wall, and, therefore, *at least partially* bounds the space.

With respect to dependent claim 18, Bol et al. teaches wherein the flowing step further comprises leaving the space so that the space is bounded at least partially by the borehole insofar as because the space containing the fluid is found in the region of inflow area of the well, and, therefore, would be *at least partially* bounded by the borehole.

With respect to dependent claim 20, Bol et al. teaches wherein the flowing step further comprises contacting a portion of the expandable material with the castable material, insofar as because the castable material flows upwards into the annulus, thereby contacting the expandable material, and, contacting another portion of the expandable material with the fluid in the space, insofar as because, as noted above within the rejection of independent claim 13, in placing the castable material in the well and displacing any drilling fluid out of the annulus therewith (col. 2, l. 41-49), a portion of a fluid that has flown into the well in the region of inflow, would be displaced with the flowing drilling fluid, and, therefore, would contact another portion of the expandable material.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bol et al. in view of Bosma et al. as applied to claim 1 above, and further in view of Miller (US 2,230,626 – cited previously).

Bol et al. in view of Bosma et al. teaches the method as stated above with respect to independent claim 1. Bol et al. provides for the use of cement as the castable material that hardens and supports the casing by filling the annulus between the casing and the borehole wall. The reference, however, fails to teach wherein the castable material is concrete as presently claimed. Miller teaches that it is known within a method for cementing an oil well to surround the oil well with cement or concrete for the purpose of sealing off a portion of the well from another (col. 1, l. 1-14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute concrete as a castable material for the cement within the method of Bol et al. in order to fill the space between the casing and the borehole wall and thereby support the casing therein since cement and concrete are known alternatives within the well bore art for sealing a portion of a well.

Response to Arguments

6. Applicant's arguments and amendments presented therewith, with respect to the rejections of claims 1-6, 7 and 12, and 8-12 as indefinite have been fully considered and are persuasive. The 35 USC 112 rejections thereof have been withdrawn.

7. Applicant's arguments, with respect to the rejection(s) of claim(s) 1-5 and 7 under 35 USC 102(b) as anticipated by Bol have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made under 35 USC 103(a) in view of Applicant's amendment to independent claim

1 adding the limitation "in response to contact with a fluid in the well system." Applicant's further arguments presented with respect to depending claim 6 as obvious over Bol in view of Miller, Applicant asserts claim 6 is allowable as dependent upon an allowable independent claim 1. The Examiner would like to note that the previous rejection of independent claim 1 as anticipated by Bol has been withdrawn. A new rejection under 35 USC 103(a), however, has been made on claim 1 as unpatentable over Bol in view of Bosma et al., and, therefore, a new rejection of depending claim 6 has been set forth as obvious over Bol in view of Bosma et al., and, further, in view of Miller.

8. Applicant's arguments, with respect to the rejection(s) of claim(s) 8-12 as unpatentable over Bol have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection of claims 8-12 is made under 35 USC 103(a) as unpatentable over Bol in view of Bosma et al.

9. Applicant's arguments, with respect to the rejection(s) of claim(s) 13-20 as unpatentable over Bol in view of Heathman et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection of claims 13-20 is made under 35 USC 103(a) as unpatentable over Bol in view of Bosma et al.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 7,303,023: Harrall et al. discloses a method of sealing an expandable tubular within a bore comprising the steps of providing an expandable tubular having a sealing medium on its outer surface, running the tubular into a bore, placing a castable material in the annular

space, and activating the sealing medium to facilitate a seal between the tubular and the bore wall, wherein one means for activating the sealing medium is contact of the sealing medium with a well fluid that causes the sealing medium to swell and thereby contact the well wall; WO 2004/067906: Richard et al. discloses a method of sealing casing or liners in a well bore wherein a covering is placed on a tubular string, the tubular string is run to a desired position in the well bore, and well fluids are used to promote the swelling of the covering.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. DiTrani whose telephone number is (571)272-2182. The examiner can normally be reached on M-F, 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on (571)272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer H Gay/
Supervisory Patent Examiner, Art Unit 3676

AD
11/06/09